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Search Results - Record(s) 1 through 5 of 5 returned.

☐ 1. Document ID: US 6661671 B1

L1: Entry 1 of 5 File: USPT Dec 9, 2003

US-PAT-NO: 6661671
DOCUMENT-IDENTIFIER: US 6661671 B1

TITLE: Apparatus, method and article of manufacture for determining power permission for a blade spanning power back planes

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw De

☐ 2. Document ID: US 6594150 B2

L1: Entry 2 of 5 File: USPT Jul 15, 2003

US-PAT-NO: 6594150
DOCUMENT-IDENTIFIER: US 6594150 B2

TITLE: Computer system having front and rear cable access

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw De

☐ 3. Document ID: US 6591324 B1

L1: Entry 3 of 5 File: USPT Jul 8, 2003

US-PAT-NO: 6591324
DOCUMENT-IDENTIFIER: US 6591324 B1

TITLE: Hot swap processor card and bus

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw De

☐ 4. Document ID: US 6535944 B1

L1: Entry 4 of 5 File: USPT Mar 18, 2003

US-PAT-NO: 6535944
DOCUMENT-IDENTIFIER: US 6535944 B1

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TITLE: Hot plug control of MP based computer system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 5. Document ID: US 6134615 A

L1: Entry 5 of 5 File: USPT Oct 17, 2000

US-PAT-NO: 6134615
DOCUMENT-IDENTIFIER: US 6134615 A

TITLE: System for facilitating the replacement or insertion of devices in a computer system through the use of a graphical user interface

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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Terms	Documents
6661671.pn. or 6594150.pn. or 6591324.pn. or 6535944.pn. or 6134615.pn.	5

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L1: Entry 4 of 5 File: USPT Mar 18, 2003

US-PAT-NO: 6535944
DOCUMENT-IDENTIFIER: US 6535944 B1

TITLE: Hot plug control of MP based computer system

DATE-ISSUED: March 18, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Johari; Girish Chandra	Austin	TX		
Mueller; Mark Wayne	Austin	TX		
Thomsen; Peter Matthew	Austin	TX		
Walter; Lucinda Mae	Austin	TX		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
International Business Machines Corporation	Armonk	NY			02

APPL-NO: 09/ 281082 [PALM]
DATE FILED: March 30, 1999

INT-CL: [07] G06 F 1/00

US-CL-ISSUED: 710/302; 710/301, 710/304, 713/340, 713/330
US-CL-CURRENT: 710/302; 710/301, 710/304, 713/330, 713/340

FIELD-OF-SEARCH: 710/300-304, 710/311, 710/313, 710/314, 710/62-64, 710/72, 713/330-340

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	5572141	November 1996	Hutton	
☐	5712754	January 1998	Sides et al.	361/58
☐	5758102	May 1998	Carey et al.	710/302
☐	5784576	July 1998	Guthrie et al.	710/302
☐	6035358	March 2000	Tanikawa	710/301

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☐	6038633	March 2000	Tavallaei	
☐	6041375	March 2000	Bass et al.	710/302
☐	6044424	March 2000	Amin	710/302
☐	6108732	August 2000	Klein	710/302
☐	6138195	October 2000	Bermingham et al.	710/104
☐	6182173	January 2001	Grosser et al.	710/302
☐	6191499	February 2001	Severson et al.	
☐	6209051	March 2001	Hill et al.	710/302
☐	6275958	August 2001	Carpenter et al.	
☐	6282596	August 2001	Bealkowski et al.	710/302
☐	6286066	September 2001	Hayes et al.	
☐	6289467	September 2001	Lewis et al.	713/340
☐	6338107	January 2002	Neal et al.	710/302

OTHER PUBLICATIONS

Atty. Docket No. AT9-98-835; U.S. patent application Ser. No. 09/281,081, Related Co-pending Application Girish Johari, et al., filed Mar. 30, 1999.

ART-UNIT: 2181

PRIMARY-EXAMINER: Wong; Peter

ASSISTANT-EXAMINER: Phan; Raymond N

ATTY-AGENT-FIRM: Bracewell & Patterson, LLP

ABSTRACT:

A method of servicing a computer system without interrupting operation of the computer system, by connecting a computer component to a board of the computer system, detecting connection of the computer component to the system board using a control circuit, supplying power to the voltage input of the computer component in response to detecting the connection, and thereafter monitoring the power supplied to the voltage input of the computer component. The method may be used for core computer components such as CPU modules and voltage regulator modules. Power to the voltage input of the computer component is turned off in response to a determination that a current level of the power supplied to the voltage input exceeds a specified level. A fault signal is latched in an active state in response to the determination; the fault signal is reset when the component is removed from the system. The method also applies to a plurality of hot-pluggable components, wherein the power supplied to each component is individually monitored.

11 Claims, 4 Drawing figures

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L10: Entry 31 of 36 File: USPT Feb 9, 1993

DOCUMENT-IDENTIFIER: US 5185691 A
**** See image for Certificate of Correction ****
TITLE: Thermal packaging for natural convection cooled electronics

Assignee Name (1):
Compaq Computer Corporation

Assignee Group (1):
Compaq Computer Corporation Houston TX 02

Brief Summary Text (6):
Power converters are necessary to convert readily available forms of power, such as power from an ac outlet or from a battery, to regulated power required by many electronic devices including laptop computers. Some of the power during the power conversion process is inevitably converted to thermal energy which must be dissipated at a high enough rate to prevent excessive heat build up and product failure. The packaging used to contain the power converter usually includes the means to diffuse the extraneous thermal energy, otherwise known as the dissipated power.

Brief Summary Text (8):
The demands of the computer market require that the power converter for a laptop computer be designed as small and lightweight as possible. The size and weight of the converter, however, depends not only on elements of the converter itself but also on the allowable dissipative power density of the packaging. It is desirable, therefore, to increase the dissipated power density of the packaging as much as possible without increasing its weight in order to decrease the size of the power converter and to stay within acceptable industry thermal standards.

Brief Summary Text (9):
Natural convection using air as the heat transfer medium is presently the preferred method to dissipate thermal energy from laptop computers and/or power converters. Air in the enclosure exhibits very low thermal conductivity which tends to decrease the tolerable dissipated power density of the power converter. Forced convection methods (a fan for example) and alternative heat transfer media are undesirable in laptop computer power converters since they would increase the size, cost and weight above acceptable limits. Since the thermal dissipation of natural convection using air as the thermal medium is limited, several methods have been developed to enhance the dissipated power density of natural convection cooled electronics.

Detailed Description Text (2):
Referring to the drawings, FIG. 1 is an exploded perspective view illustrating an electronic device, generally referred to by the letter E, constructed according to the present invention. The electrical components of the electronic device E are mounted onto a rectangular circuit board 28, and this assembly is placed into the lower half member 20c of a hollow box-like enclosure 20 (FIG. 2), which is preferably shaped like a rectangular parallelepiped. The electronic device E illustrated in the drawings is a test device used for thermal characteristic evaluations, but is similar in size and shape to the intended electronic devices to be used with the present invention, such as dc--dc converters and the like. The

enclosure 20 is preferably made of any of the organic polymeric compositions commonly used as structural plastics such as polyesters, especially a thermoplastic polyester sold under the trade mark Valox by General Electric, acrylonitrile-butadiene-styrenes (ABS), polycarbonates, and the like. It is desirable that the organic polymeric composition used be able to conduct heat readily and not melt at the temperature of use. Furthermore, the organic polymeric composition may be filled with a conductive filler such as aluminum or copper powder, or the like, to increase the heat conductivity of the composition. The enclosure 20 comprises an upper half member 20a and the lower half member 20c. The lower half member 20c includes a rabbet 20d that protrudes above the inside of its upper edge, and the upper half member 20a includes a similar rabbet 20b (FIG. 4) along its lower edge to mate with the lower rabbet 20d.

Detailed Description Text (5):
FIG. 3 is a top view of the electronic device E with the upper half member 20a removed. A power transformer 26, the size of which is typical of a transformer used in a dc--dc power converter for a laptop computer, is mounted in the center of the circuit board 28. The transformer 26 is not electrically coupled in the illustrated embodiment and is present for thermal measurements only in the illustrated embodiment. Four 10 ohm power resistors 30, 32, 34 and 36, each in TO-220 packaging, are mounted to the circuit board 28. The resistors 30 and 32 are mounted side by side next to one side of the transformer 26 facing away from the transformer 26, and the resistors 34 and 36 are mounted similarly on the opposite side of the transformer 26 facing the opposite direction. The resistors 30, 32, 34 and 36 simulate transistors, diodes, thyristors or other electronic elements conventionally used in electronic devices.

Detailed Description Text (20):
The resistors 30, 32, 34 and 36 are packaged in plastic and physically represent similar devices such as various transistors used extensively in power converters that dissipate a large percentage of the overall dissipative power and have a silicon junction that should not exceed 125.degree. C. in order to maintain the reliability of the component. The thermocouples 64a-d were attached to the metal tab of the TO-220 style package and thus measured a slightly lower temperature than would be the actual silicon junction temperature. A margin of error of 5.degree. C. was added to account for this error. T.sub.P/F for the thermocouples 64a-d was calculated from the following formula:

Detailed Description Text (25):
Tables 2 and 3 indicate that all the temperatures are within allowable levels at all the thermocouple locations 64a-j for dissipated power densities of approximately 525 and 1000 mW/in.sup.3 respectively Table 4 indicates marginal failures at 40.degree. C. at thermocouples 64f and 64g at dissipated power density of approximately 1500 mW/in.sup.3. The marginal failure points could be easily removed by minor optimization readily performed by one skilled in the art. Table 5 indicates failures at the majority of thermocouple locations at a dissipated power density of approximately 2000 mW/in.sup.3 for the specific test sample. The addition of a third heat fin member extending over the top of the resistors 30, 32, 34 and 36 would solve these thermal issues.

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L10: Entry 31 of 36 File: USPT Feb 9, 1993

US-PAT-NO: 5185691
DOCUMENT-IDENTIFIER: US 5185691 A
** See image for Certificate of Correction **

TITLE: Thermal packaging for natural convection cooled electronics

DATE-ISSUED: February 9, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Korinsky; George K.	Houston	TX		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Compaq Computer Corporation	Houston	TX			02

APPL-NO: 07/ 670347 [PALM]
DATE FILED: March 15, 1991

INT-CL: [05] H05K 7/20

US-CL-ISSUED: 361/386; 361/383, 361/392, 361/394
US-CL-CURRENT: 361/720; D13/184

FIELD-OF-SEARCH: 307/150, 361/383, 361/386, 361/388-389, 361/392, 361/394, 361/395, 361/399, 363/141, 363/144

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	3462553	August 1969	Spranger	361/383
☐	3857044	December 1974	Papoi et al.	361/383
☐	3934177	January 1976	Horbach	361/388
☐	4471407	September 1984	Sleder	361/387
☐	4528615	July 1985	Perry	361/387
☐	4639836	January 1987	Mayer	361/383
☐	4872102	October 1989	Getter	361/383

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☐	4879632	November 1989	Yamamoto et al.	361/386
☐	5031072	July 1991	Malhi et al.	361/387
☐	5060114	October 1991	Feinberg et al.	361/387

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0152254	November 1981	JP	361/383
2052164	January 1981	GB	361/383

ART-UNIT: 213

PRIMARY-EXAMINER: Thompson; Gregory D.

ATTY-AGENT-FIRM: Pravel, Gambrell, Hewitt, Kimball & Krieger

ABSTRACT:

A natural convection cooled electronic device utilizing a box-like plastic enclosure surrounding the circuitry of the electronic device. The apparatus further includes aluminum heat sinks fastened in good thermal contact with heat dissipating components of the electronic device, wherein the heat sinks include heat fin members which run parallel to the inner walls of the enclosure and are separated from the walls by an air gap. The inner walls of the enclosure are lined with a layer of thermally conductive material, such as copper foil, which spreads the internal heat flux across the total surface area of the enclosure. The exposed surface of the heat flux spreader layer and the facing surface of the heat fin members are further made semi-rough and stained black to eliminate potential hot spots and to increase radiant heat transfer between the heat sinks and the enclosure.

28 Claims, 7 Drawing figures

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L6: Entry 6 of 13 File: USPT Oct 30, 2001

DOCUMENT-IDENTIFIER: US 6311279 B1
TITLE: Network node with internal battery backup

Brief Summary Text (20):
In an alternate embodiment, an additional battery could be connected to the node between the UPS battery and DC-DC converter. Note, however, that any additional battery would not be part of, nor charged by, the UPS.

Detailed Description Text (19):
In the embodiment shown, a modular internal uninterruptible power supply 100 incorporates a battery charger 106, a battery 108, and a DC-DC converter 110. At least one of the DC voltage outputs powers the battery charger 106. While AC power is available from AC power source 102, the battery charger 106 charges the battery 108. When the DC outputs of the main power supply 104 fail to maintain the correct voltage levels (due to loss of AC power, component failure, etc.), the DC-DC converter 110 uses the battery 108 to restore the DC outputs to their correct voltage levels until the battery is exhausted or AC power is restored.

Detailed Description Text (28):
According to another disclosed class of embodiments, there is provided a computer network, comprising: at least two computers; and a network device, functionally connected to said computers, which incorporates at least one control unit which is operatively connected to detect inputs from said computers and to send data to said computers, a main power supply, and an internal uninterruptible power supply functionally connected to provide DC power to said control unit when said main power supply fails to provide power within a predetermined range.

Detailed Description Text (29):
According to another disclosed class of embodiments, there is provided a computer network subsystem, comprising: a hub for interconnecting computers, which includes therein: at least one control unit which is operatively connected to at least one computer, a main power supply, and an internal uninterruptible power supply functionally connected to provide DC power to said control unit when said main power supply fails to provide power within a predetermined range.

Detailed Description Text (30):
According to another disclosed class of embodiments, there is provided a computer network subsystem, comprising: a router for providing intelligent traffic routing, which includes therein: at least one control unit which is operatively connected to at least one computer, a main power supply, and an internal uninterruptible power supply functionally connected to provide DC power to said control unit when said main power supply fails to provide power within a predetermined range.

Detailed Description Text (31):
According to another disclosed class of embodiments, there is provided a computer network subsystem, comprising: a server for providing network access to a shared resource, which includes therein: at least one control unit which is operatively connected to at least one computer, a main power supply, and a modular internal uninterruptible power supply functionally connected to provide DC power to said control unit when said main power supply fails to provide power within a

predetermined range.

Detailed Description Text (32):
According to another disclosed class of embodiments, there is provided a computer network subsystem, comprising: a gateway for providing, which includes therein: at least one control unit which is operatively connected to at least one computer, a main power supply, and an internal uninterruptible power supply functionally connected to provide DC power to said control unit when said main power supply fails to provide power within a predetermined range.

CLAIMS:

7. A computer network, comprising:

at least two computers; and

a network device to interconnect said at least two computers, the network device comprising:

at least one control unit configured to detect inputs from said computers and to send data to said computers;

a main power supply comprising a DC output and main power conversion circuitry configured to provide DC power at said DC output to said control unit; and

an internal uninterruptible power supply (UPS) comprising a UPS power source and UPS circuitry, said UPS circuitry being connected to the DC output of the main power supply and configured to provide DC power at said DC output from said UPS power source to said control unit only when said main power supply fails to provide DC power within a predetermined range, said UPS circuitry being different than said main power conversion circuitry.

8. The computer network of claim 7, wherein said network device is a router.

9. The computer network of claim 7, wherein said internal uninterruptible power supply is modular.

10. The computer network of claim 7, wherein said network device is a hub.

11. The computer network of claim 7, wherein said network device is a gateway.

12. The computer network of claim 7, wherein said network device is a server.

13. The computer network of claim 7, wherein said UPS power source comprises a chargeable battery operatively connected to said DC output of said main power supply to receive a charge current from said main power supply.

L8: Entry 7 of 8 File: USPT Nov 3, 1992

DOCUMENT-IDENTIFIER: US 5161097 A
TITLE: Electric power unit

Abstract Text (1):
The electric power unit of the present invention for a battery-powered electronic appliance comprises a chopper-controlled nonisolated DC-DC converter for converting the output voltage of a battery into required voltage, a bypass switch for bypassing the DC-DC converter, a comparator for comparing the output voltage of the battery with a reference voltage corresponding to the required voltage of the load circuit, and a controller for controlling the bypass switch on the basis of the output signal of the comparator. When the output voltage of the battery is higher than the reference voltage, the battery is connected directly to the load circuit, so that the power of the battery can be supplied to the load circuit without loss due to the operation of the DC-DC converter. When the output voltage is lower than the reference voltage, the output voltage of the battery is converted into a voltage nearly equal to the required voltage of the load circuit by the DC-DC converter, so that substantially all the energy stored in the battery can effectively be used.

Brief Summary Text (3):
The present invention relates to an electric power unit for supplying the output power of a battery to a load circuit through a chopper-controlled nonisolated DC-DC converter (hereinafter referred to simply as "DC-DC converter") and, more particularly, to an electric power unit capable of supplying the energy stored in a battery to a load circuit at the least possible loss of energy.

Brief Summary Text (5):
Recent cordless electronic appliances, such as portable computers, portable word processors, portable VTRs and portable video cameras, are provided with a built-in electric power unit comprising a battery, such as a nickel-cadmium secondary battery, and a DC-DC converter for converting and stabilizing the output voltage of the battery. Generally, the battery comprises a plurality of cells connected in series, and the output voltage of the battery is converted into a voltage required by the load circuit by the DC-DC converter.

Brief Summary Text (6):
In designing a battery-powered electronic appliance provided with an electric power unit, it is a very important technical problem to extend the continuous duty time, namely, a time period in which the battery-powered electronic appliance is able to operate without recharging the battery or without changing the battery, under limited conditions for the dimensions and weight of the battery-powered electronic appliance. Accordingly, many studies have been made to increase the energy density of the battery and to reduce the power consumption of the circuit. As is well known, power loss in the chopper-controlled DC-DC converter, i.e., a switching regulator, is far less than that in the conventional series regulator and hence the chopper-controlled DC-DC converter is recently applied to many electronic appliances. However, the power loss even in the chopper-controlled nonisolated DC-DC converter is in the range of 20 to 25%, which is significantly large in view of further reducing the power consumption of the electronic appliance, and the electric power unit itself has a significant cause of reducing the continuous duty

time of the battery-powered electronic appliance.

Brief Summary Text (7):
If the number of series-connected cells of an electric power supply is determined selectively so as to meet the required voltage of the load circuit, the DC-DC converter may be omitted. Some battery-powered electronic appliances are provided with such an electric power unit. In designing such an electric power unit for a battery-powered electronic appliance, the number of series-connected cells of the battery is determined so that the sum of the voltage of the cells in the stable discharge period in the discharge characteristic curve, i.e., the nominal voltage, coincides with the required voltage of the load circuit of the battery-powered electronic appliance. The output voltage of the battery decreases gradually as the battery is discharged, and warning is given to prompt the operator to stop the use of the appliance, or the electric power unit is disconnected automatically to prevent the malfunction of the load circuit, upon the drop of the output voltage below a threshold value. That is, the final discharge voltage of the battery is set for a voltage slightly higher than a voltage below which the load circuit is unable to function normally, and the discharge of the battery is stopped upon the decrease of the output voltage of the battery below the final discharge voltage. As is well known, the output voltage of the battery, in general, gradually decreases as the battery is discharged. Even if the discharge of the battery is stopped upon the decrease of the output voltage below a certain final discharge voltage, the battery is not completely exhausted; a considerable amount of energy still remains in the battery. Accordingly, the electric power unit not employing a DC-DC converter is unable to use the residual energy remaining in the battery after the output voltage has dropped below the final discharge voltage, so that the continuous duty time of the electronic appliance is diminished.

Brief Summary Text (10):
In one aspect of the present invention, an electric power unit comprises: a battery; a chopper-controlled nonisolated DC-DC converter (hereinafter referred to simply as "DC-DC converter") having input terminals connected to the battery and output terminals connected to a load circuit; a bypass switch for connecting the input terminals of the DC-DC converter to the output terminals of the same to apply the output of the battery directly to the load circuit; a comparing means for comparing the input voltage of the DC-DC converter and a reference voltage to see if the input voltage is higher than a lower limit voltage (threshold voltage) determined on the basis of the required voltage of the load circuit; and a control means for stopping the operation of the DC-DC converter and closing the bypass switch to bypass the DC-DC converter when the input voltage of the DC-DC converter is higher than the lower limit voltage, and for making the DC-DC converter operative and opening the bypass switch when the input voltage of the DC-DC converter is lower than the lower limit voltage.

Brief Summary Text (11):
The electric power unit applies the output voltage of the battery directly to the load circuit, with the DC-DC converter held inoperative, when the output voltage of the battery is higher than the lower limit voltage corresponding to the required voltage of the load circuit, and opens the bypass switch to make the DC-DC converter operative to convert the output voltage of the battery into a voltage nearly equal to the required voltage when the output voltage of the battery is lower than the lower limit voltage. Thus, the electric power unit is able to operate at a high efficiency while the output voltage of the battery is higher than the lower limit voltage because power loss due to the operation of the DC-DC converter is avoided, and the electric power unit is able to use all the energy stored in the battery effectively because the output voltage of the electric power unit is stabilized by the DC-DC converter after the output voltage of the battery has dropped below the lower limit voltage. Consequently, the continuous duty time of a battery-powered electronic appliance employing the electric power unit of the present invention is extended.

Detailed Description Text (2):
An electric power unit in a preferred embodiment according to the present invention shown in FIG. 1 supplies the output of a battery 1 through a chopper-controlled nonisolated DC-DC converter 2 of a booster type (hereinafter referred to simply as "DC-DC converter") to a load circuit 3. The electric power unit is provided with a latching relay 4 (bypass switch) for directly connecting the input terminal of the DC-DC converter to the output terminal of the same to apply the output of the battery 1 directly to the load circuit 3. The latching relay 4 has mechanical contacts which are maintained in the last position assumed. As shown in FIG. 2, the DC-DC converter 2 is held inoperative and the latching relay 4 is set to an ON state in the initial discharge period and the middle discharge period in which the output voltage of the battery 1 is higher than a reference voltage Vs slightly lower than the nominal voltage of the battery 1 to apply the output of the battery 1 directly to the load circuit 3. In the final discharge period in which the output voltage of the battery 1 is lower than the reference voltage Vs, the DC-DC converter 2 is made operative and the latching relay 4 is set to an OFF state to convert the output voltage of the battery 1 into an output voltage nearly equal to the nominal voltage and to apply the increased output voltage to the load circuit 3.

Detailed Description Text (4):
The output voltage V1 of the battery 1 is detected through voltage dividing resistors R3 and R4, and is compared with a reference voltage Vb corresponding to the reference voltage Vs shown in FIG. 2 by a comparator 5. If the output voltage V1 of the battery 1 is higher than the reference voltage Vb, the output signal of the comparator 5 goes HIGH. If the output voltage V1 of the battery 1 is lower than the reference voltage Vb, the output signal of the comparator 5 goes LOW. The oscillator 25 of the DC-DC converter 2 is controlled by the output signal of the comparator 5. When the output signal of the comparator 5 is HIGH, the oscillator 25 is stopped and the transistor 22 is turned off to hold the DC-DC converter 2 inoperative.

Detailed Description Text (6):
It is also possible to employ a DC-DC converter of a stepping-down type to convert the output voltage of the battery into a required voltage while the output voltage of the battery is excessively high in the initial discharge period and to connect the battery directly to the load circuit after the output voltage of the battery has dropped to an appropriate level.

Detailed Description Text (7):
As is apparent from the foregoing description, the electric power unit holds its DC-DC converter inoperative and supplies power directly from the battery to the load circuit while the output voltage is higher than the reference voltage to supply power without loss attributable to the operation of the DC-DC converter, and converts the output voltage of the battery into a voltage nearly equal to the reference voltage by the DC-DC converter after the output voltage has dropped below the reference voltage to use substantially all the energy stored in the battery. Accordingly, the electric power unit extends the continuous duty time of the associated battery-powered electronic appliance.

CLAIMS:

1. An electric power unit for supplying power to a battery-powered load circuit, comprising:

a chopper-controlled nonisolated DC-DC converter for converting the output voltage of a battery into a required voltage;

a bypass switch for bypassing the chopper-controlled nonisolated DC-DC converter to

connect the battery directly to the load circuit;

a comparing means for comparing the output voltage of the battery with a threshold voltage to see if the output voltage of the battery is higher than the threshold voltage; and

a control means for controlling the bypass switch on the basis of the output signal of the comparing means to hold the chopper-controlled nonisolated DC-DC converter inoperative by closing the bypass switch so that the battery is connected directly to the load circuit and to make the chopper-controlled nonisolated DC-DC converter operative by opening the bypass switch so that the output power of the battery is supplied through the chopper-controlled nonisolated DC-DC converter to the load circuit.

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L8: Entry 7 of 8 File: USPT Nov 3, 1992

US-PAT-NO: 5161097
DOCUMENT-IDENTIFIER: US 5161097 A

TITLE: Electric power unit

DATE-ISSUED: November 3, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ikeda; Osamu	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Dia Semicon Systems Incorporated	Tokyo			JP	03

APPL-NO: 07/ 854235 [PALM]
DATE FILED: March 20, 1992

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	3-322369	November 12, 1991

INT-CL: [05] H02M 3/335

US-CL-ISSUED: 363/124; 323/222, 323/299
US-CL-CURRENT: 363/124; 323/222, 323/299

FIELD-OF-SEARCH: 363/124, 323/222, 323/299

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	4823247	April 1989	Tamoto	363/124 X

ART-UNIT: 212

PRIMARY-EXAMINER: Voeltz; Emanuel T.

h e b b g e e e f c e e ge

ATTY-AGENT-FIRM: Barnes & Thornburg

ABSTRACT:

The electric power unit of the present invention for a battery-powered electronic appliance comprises a chopper-controlled nonisolated DC-DC converter for converting the output voltage of a battery into required voltage, a bypass switch for bypassing the DC-DC converter, a comparator for comparing the output voltage of the battery with a reference voltage corresponding to the required voltage of the load circuit, and a controller for controlling the bypass switch on the basis of the output signal of the comparator. When the output voltage of the battery is higher than the reference voltage, the battery is connected directly to the load circuit, so that the power of the battery can be supplied to the load circuit without loss due to the operation of the DC-DC converter. When the output voltage is lower than the reference voltage, the output voltage of the battery is converted into a voltage nearly equal to the required voltage of the load circuit by the DC-DC converter, so that substantially all the energy stored in the battery can effectively be used.

4 Claims, 2 Drawing figures

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US-PAT-NO: 6696821

DOCUMENT-IDENTIFIER: US 6696821 B2

TITLE: DC-DC converter, duty-ratio setting circuit and electric appliance using them

---------- KWIC ---------

Brief Summary Text - BSTX (7):

A DC--DC converter capable of converting the direct current voltage into a predetermined level has been miniaturized and its efficiency has been highly increased, so that the DC--DC converter has been used for a power supply device of various kinds of electric appliances and its range of use has been increasingly enlarged. In such electric appliances, particularly such as a notebook type of personal computer and portable electric appliances such as a portable phone terminal, the DC--DC converter is an essential device since an IC, an electric circuit, motor and a liquid crystal display device in a main body of the above electric appliances are operated by means of a battery, for example, a primary battery such as an alkaline cell or a secondary battery such as a lithium-ionic cell and a nickel-hydrogen cell as a power supply.

Brief Summary Text - BSTX (9):

Recently, there is a need for the long use of electric appliances, particularly portable electric appliances. It means that there is a requirement of providing a DC--DC converter capable of operating and of supplying a main body of an electric appliance with a predetermined value of output voltage not only in the case that a between-terminal voltage, that is, an input voltage is high since a battery has enough energy, but also in the case that the between-terminal voltage (the input voltage) decreases since the energy is used to be discharged. In other words, a DC--DC converter having a wide operable range of the input voltage is required.

Brief Summary Text - BSTX (11):

In a DC--DC converter, the voltage conversion is impossible when the on-duty ratio of the rectangular-wave signal is 100%. As a result, the output voltage in a step-up type of DC--DC converter would decrease to the earth potential,

US005267211A

United States Patent [19]

Kobayashi et al.

[11] Patent Number: 5,267,211

[45] Date of Patent: Nov. 30, 1993

[54] **MEMORY CARD WITH CONTROL AND VOLTAGE BOOSTING CIRCUITS AND ELECTRONIC APPLIANCE USING THE SAME**

[75] Inventors: **Ichiro Kobayashi; Atsushi Yamada; Noriaki Sakurada**, all of Nagano, Japan

[73] Assignee: **Seiko Epson Corporation**, Tokyo, Japan

[21] Appl. No.: **838,713**

[22] PCT Filed: **Aug. 23, 1991**

[86] PCT No.: **PCT/JP91/01121**

§ 371 Date: **May 12, 1992**

§ 102(e) Date: **May 12, 1992**

[87] PCT Pub. No.: **WO92/03298**

PCT Pub. Date: **May 3, 1992**

[30] **Foreign Application Priority Data**

Aug. 23, 1990 [JP] Japan 2-221939

[51] **Int. Cl.**[5] **G11C 5/14**

[52] **U.S. Cl.** **365/228**; 365/229

[58] **Field of Search** 365/228, 229

[56] **References Cited**

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5,168,206	12/1992	Jones	365/229

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60-163120	8/1985	Japan	365/229
63-20590	1/1988	Japan .	
63-286991	11/1988	Japan .	
63-291188	11/1988	Japan .	
1-288984	11/1989	Japan .	
2-50285	2/1990	Japan .	

Primary Examiner—Eugene R. LaRoche
Assistant Examiner—Michael C. Kessell
Attorney, Agent, or Firm—Ladas & Parry

[57] **ABSTRACT**

A memory card mounted with a storage device and an electronic appliance using such a memory device. The memory card has an RAM (36), a battery (38), a voltage converter (40) for boosting a voltage of the battery and for outputting the boosted voltage, and a switching circuit (42) for receiving an output voltage of the voltage converter and an externally supplied voltage and for supplying one of the received voltages to the RAM as a driving voltage therefor, so that a voltage higher than the battery voltage is supplied to the RAM at the time of backup to thereby reduce soft errors.

14 Claims, 6 Drawing Sheets

US005161097A

United States Patent [19]

Ikeda

[11] Patent Number: 5,161,097

[45] Date of Patent: Nov. 3, 1992

[54] ELECTRIC POWER UNIT

[75] Inventor: Osamu Ikeda, Tokyo, Japan

[73] Assignee: Dia Semicon Systems Incorporated, Tokyo, Japan

[21] Appl. No.: 854,235

[22] Filed: Mar. 20, 1992

[30] Foreign Application Priority Data

Nov. 12, 1991 [JP] Japan 3-322369

[51] Int. Cl.[5] H02M 3/335

[52] U.S. Cl. 363/124; 323/222; 323/299

[58] Field of Search 363/124; 323/222, 299

[56] References Cited

U.S. PATENT DOCUMENTS

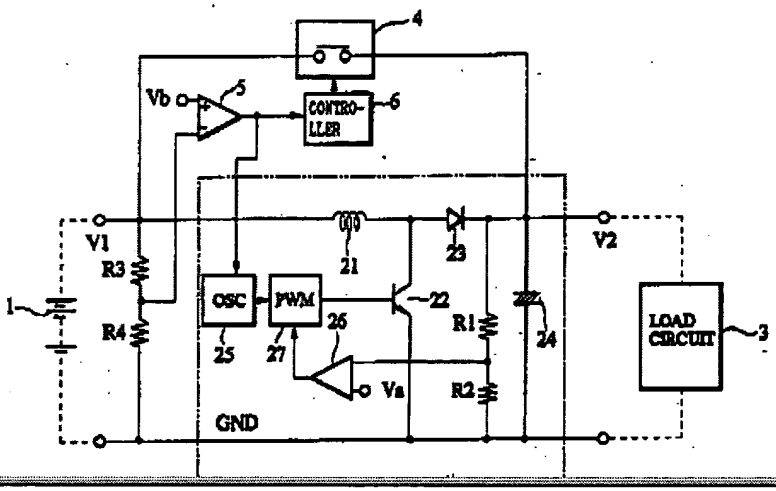
4,823,247 4/1989 Tamoto ..... 363/124 X

Primary Examiner—Emanuel T. Voeltz
Attorney, Agent, or Firm—Barnes & Thornburg

[57] ABSTRACT

The electric power unit of the present invention for a battery-powered electronic appliance comprises a chopper-controlled nonisolated DC-DC converter for converting the output voltage of a battery into required voltage, a bypass switch for bypassing the DC-DC converter, a comparator for comparing the output voltage of the battery with a reference voltage corresponding to the required voltage of the load circuit, and a controller for controlling the bypass switch on the basis of the output signal of the comparator. When the output voltage of the battery is higher than the reference voltage, the battery is connected directly to the load circuit, so that the power of the battery can be supplied to the load circuit without loss due to the operation of the DC-DC converter. When the output voltage is lower than the reference voltage, the output voltage of the battery is converted into a voltage nearly equal to the required voltage of the load circuit by the DC-DC converter, so that substantially all the energy stored in the battery can effectively be used.

4 Claims, 2 Drawing Sheets



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L1: Entry 4 of 11 File: USPT Sep 17, 2002

DOCUMENT-IDENTIFIER: US 6452797 B1
** See image for Certificate of Correction **
TITLE: Fan-cooled card

Brief Summary Text (6):
In a computer environment (e.g., a personal computer or workstation), a fan is typically placed at the front or rear of the computer so that cooler air from outside the chassis of the computer may be brought in to the circuits on the main circuit board (also referred to as a motherboard). In some computer chassis, one or more paths may be provided which draw the air flow from the front or rear of the computer to other areas inside the chassis.

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L1: Entry 4 of 11 File: USPT Sep 17, 2002

US-PAT-NO: 6452797
DOCUMENT-IDENTIFIER: US 6452797 B1
** See image for Certificate of Correction **

TITLE: Fan-cooled card

DATE-ISSUED: September 17, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Konstad; Rolf A.	Gold River	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Intel Corporation	Santa Clara	CA			02

APPL-NO: 08/ 968399 [PALM]
DATE FILED: November 12, 1997

INT-CL: [07] H05 K 7/20

US-CL-ISSUED: 361/695; 165/80.3, 361/687, 454/184
US-CL-CURRENT: 361/695; 165/80.3, 257/E23.099, 361/687, 454/184

FIELD-OF-SEARCH: 312/223.1, 312/236, 415/177, 415/178, 415/213.1, 415/214.1, 165/80.3, 165/122-126, 454/184, 361/687, 361/690, 361/694, 361/695, 361/697, 361/717-719, 361/725

PRIOR-ART-DISCLOSED:

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Search Selected Search ALL Clear

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☐	5721670	February 1998	Cochrane	361/695
☐	5725622	March 1998	Whitson	361/695
☐	5828549	October 1998	Gandre	
☐	5963424	October 1999	Hileman	

ART-UNIT: 2835

PRIMARY-EXAMINER: Tolin; Gerald

ATTY-AGENT-FIRM: Kenyon & Kenyon

ABSTRACT:

To manage heat generated by an electric circuit, a fan is provided to generate an air flow through a ducting structure over the electric circuit. For example, in a graphics accelerator card, a fan is placed in a void in the card and a ducting structure is placed over the fan and the graphics controller IC chip of the card. Air flow generated by the fan travels over the IC chip via the ducting structure to reduce the ambient temperature around the IC chip. The height of the ducting structure from a surface of the graphics accelerator card may be made sufficiently small so as to satisfy height requirements set forth in specifications such as the Peripheral Component Interconnect (PCI) and Accelerated Graphics Port (AGP) specifications.

21 Claims, 8 Drawing figures

First Hit Fwd Refs

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☐ Generate Collection Print

L5: Entry 8 of 8 File: USPT Sep 10, 1996

DOCUMENT-IDENTIFIER: US 5555510 A
TITLE: Automatic computer card insertion and removal algorithm

Detailed Description Text (6):
In the 68 pin connector specified by the PC standard there are card detect signal pins that are shorter than the normal signal pins in the connector. And the ground pins in the PC connector are longer than the normal signal pins. During PC card insertions, a ground pin can be used as an insertion detector since it will be the first pin to make contact. To do this, the ground pin(s) are forced to a logic "1" when a PC card is not inserted in the socket. However, this is done by a means that can easily be overcome by a direct connection to ground. Such a means could be a pull-up resistor. Detection of the ground pin making contact gives controller 20 several milliseconds of advance warning of an impending insertion. The card detect signals can be used to indicate when the PC card's signal pins have become engaged with the socket of the connector. During PC card removals, the card detect pins provide the advance warning of an impending removal to controller 20. The ground pins then can be used to indicate when the PC card's signal pins have been fully disengaged from the socket portion of the 68 pin connector.

Current US Original Classification (1):
710/302

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First Hit Fwd Refs

End of Result Set

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L5: Entry 8 of 8 File: USPT Sep 10, 1996

US-PAT-NO: 5555510
DOCUMENT-IDENTIFIER: US 5555510 A

TITLE: Automatic computer card insertion and removal algorithm

DATE-ISSUED: September 10, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Verseput; Jerry	Folsom	CA		
Lam; Fong-Shek	Folsom	CA		
Shah; Prasanna	Citrus Heights	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Intel Corporation	Santa Clara	CA			02

APPL-NO: 08/ 284185 [PALM]
DATE FILED: August 2, 1994

INT-CL: [06] H02 H 9/00

US-CL-ISSUED: 364/514R; 364/240, 364/240.1, 364/927.92, 307/38, 361/58
US-CL-CURRENT: 710/302; 307/38, 361/58

FIELD-OF-SEARCH: 364/514A, 364/514B, 364/514C, 364/514R, 364/240, 364/240.1, 364/927.92, 364/935.41, 395/325, 361/58, 307/38, 307/39

PRIOR-ART-DISCLOSED:

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Search Selected Search ALL Clear

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Computer Architecture: A Quantitative Approach, by John L. Hennessy and David A. Patterson, 1990, Chapter 8, pp. 433-449.

ART-UNIT: 244

PRIMARY-EXAMINER: Trammell; James P.

ASSISTANT-EXAMINER: Assouad; Patrick J.

ATTY-AGENT-FIRM: Blakely, Sokoloff, Taylor & Zafman

ABSTRACT:

A method applicable to a host computer system having a system bus connected to a CPU, and a PCMCIA controller having status registers, means for supplying back off signals to the CPU and line buffers capable of being in a normal and high impedance state. A multi pin connector is located in each card socket and connected to a line buffer. Each connector has common address, data and control pins, power pins, ground pins longer than the data pins and card detect signal pins shorter than the signal pins. The first step is to detect the commencement of an insertion or removal of a PCMCIA card to or from a socket by monitoring the ground and card detect signal pins. After detection, commence termination of all CPU usage of common address, data and control lines by asserting a back off signal. Next, determine if the usage is terminated by monitoring the status registers in the controller. Next, place the common address, data and control lines in a high impedance state. Next, detect that the PC card has been completely inserted or removed by monitoring the ground pins or the card detect signal pins. Next, apply power to the PCMCIA card socket. After a delay return the common address, data and control lines to their normal operating impedance level.

14 Claims, 4 Drawing figures

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L3: Entry 3 of 18 File: USPT Jul 29, 2003

DOCUMENT-IDENTIFIER: US 6601096 B1
TITLE: Client server method for loading a client with a specific image or utility based on the client's state

Brief Summary Text (7):
The Preboot Execution Environment (PXE) Specification, Version 2.0 dated Dec. 28, 1998 (which is incorporated herein by reference), provides a downloaded Network Bootstrap Programs with a uniform and consistent pre-boot operating environment within the booting client, so it can accomplish its task independent of, for example, the type of network adapter implemented in the system. This capability is useful in enhancing the manageability of the client machine in several situations; for example: Remote new system setup. If the client does not have an OS installed on its hard disk, or the client has no hard disk at all, downloading a NBP from a server can help automate the OS installation and other configuration steps. Remote emergency boot. If the client machine fails to boot due to a hardware or software failure, downloading an executable image from a server can provide the client with a specific executable that enables remote problem notification and diagnosis. Remote network boot. In instances where the client machine has no local storage, it can download its system software image from the server in the course of normal operation.

Current US Cross Reference Classification (2):
713/2

First Hit Fwd Refs

Generate Collection Print

L3: Entry 3 of 18 File: USPT Jul 29, 2003

US-PAT-NO: 6601096
DOCUMENT-IDENTIFIER: US 6601096 B1

TITLE: Client server method for loading a client with a specific image or utility based on the client's state

DATE-ISSUED: July 29, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lassiter, Jr.; Linwood Ottis	Four Oaks	NC		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
International Business Machines Corporation	Armonk	NY			02

APPL-NO: 09/ 477743 [PALM]
DATE FILED: January 4, 2000

INT-CL: [07] G06 F 15/177

US-CL-ISSUED: 709/222; 709/227, 713/2, 713/200
US-CL-CURRENT: 709/222; 709/227, 713/2, 713/200

FIELD-OF-SEARCH: 709/227, 709/217, 709/219, 709/223, 713/2, 713/200

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

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☐	5875306	February 1999	Bereiter	
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IBM. 1998. WorkSpace On-Demand 2.0 Administrator's Guide.pp. 1-4.

ART-UNIT: 2153

PRIMARY-EXAMINER: Lim; Krisna

ASSISTANT-EXAMINER: Barqadle; Yasin M

ATTY-AGENT-FIRM: Schelkopf; J. Bruce Sawyer Law Group

ABSTRACT:

PXE Frame extension tags are used for remote boot loading client machines to afford servers deterministic ability for what image or utility the client requires based on its boot state. The invention takes advantage of the PXE frame by using the DHCP/PXE Vendor Tags for providing information to the PXE Server as to what image or boot process is required from the server by the client. This solution is targeted primarily, but not limited to, "media less" or "thin clients". The invention provides the client an ability to give a DHCP/PXE server more deterministic information about itself. The server can use this information (i.e. information contained within the Extension tags) to determine more precisely the client machine's boot state DHCP/PXE server code parseses the DHCP/PXE extension tags (contained within the DHCP/PXE data frame) and uses the POST error information and/or the Vital Product Data (VPD) to provide the client with a tailored boot image.

5 Claims, 4 Drawing figures

L3: Entry 8 of 18 File: USPT Jul 16, 2002

DOCUMENT-IDENTIFIER: US 6421777 B1
**** See image for Certificate of Correction ****
TITLE: Method and apparatus for managing boot images in a distributed data processing system

Detailed Description Text (9):
With reference now to FIG. 3, a block diagram illustrates a data processing system in which the present invention may be implemented. Data processing system 300 is an example of a client computer. Data processing system 300 employs a peripheral component interconnect (PCI) local bus architecture. Although the depicted example employs a PCI bus, other bus architectures such as Micro Channel and ISA may be used. Processor 302 and main memory 304 are connected to PCI local bus 306 through PCI bridge 308. PCI bridge 308 also may include an integrated memory controller and cache memory for processor 302. additional connections to PCI local bus 306 may be made through direct component interconnection or through add-in boards. In the depicted example, local area network (LAN) adapter 310, SCSI host bus adapter 312, and expansion bus interface 314 are connected to PCI local bus 306 by direct component connection. In the present example, LAN adapter 310 may include ROM used to boot Remote Initial Program Load (RIPL) which is a protocol used for remote booting in the depicted examples. RIPL is available from International Business Machines. Other types of boot protocols also may be implemented in the ROM, and can be used with this invention. The client supports native execution of MS-DOS and Windows, all of which are available from Microsoft Corporation, and OS/2, which is available from International Business Machines.

Detailed Description Text (11):
An operating system runs on processor 302 and is used to coordinate and provide control of various components within data processing system 300 in FIG. 3. The operating system may be a commercially available operating system such as OS/2, which is available from International Business Machines Corporation. "OS/2" is a trademark of International Business Machines Corporation. An object oriented programming system such as Java may run in conjunction with the operating system and provides calls to the operating system from Java programs or applications executing on data processing system 300. "Java" is a trademark of Sun Microsystems, Inc. Instructions for the operating system, the object-oriented operating system, and applications or programs are located on storage devices, such as hard disk drive 326, and may be loaded into main memory 304 for execution by processor 302. Additionally, the instructions for the operating system could be downloaded into the memory of the computer from a remote server, using a remote boot protocol implemented in ROM on the LAN adapter 310.

Detailed Description Text (16):
The mechanism of the present invention provides for managing the installation and maintenance of multiple operating systems on multiple client computer systems from a remote server, using remote boot technologies. Multiple remote boot images can be stored on the server. The remote boot image may itself consist either of a full operating environment, such as, for example, DOS or OS/2, or may only contain instructions to redirect the boot from another device, or to perform maintenance tasks on the target client system.

Detailed Description Text (20):
Remote Initial Program Load (RIPL) is a protocol used for remote booting in the depicted examples. The client supports native execution of MS-DOS and Windows 3.x, all of which are available from Microsoft Corporation, and OS/2, which is available from International Business Machines.

Detailed Description Text (41):
Upon the reboot, another RIPL boot request is sent to server 406 from client 400. At this time, state daemon 406 will identify the state of client 400, which is PREP at this time. In response to this state, a maintenance and installation remote boot image, for example, the DOSWin image is returned to client 400. In this example, the DOSWin image is a DOS-based remote boot image to drive the installation of a Windows operating system on to the local hard disk of the target client computer 400. Other similar remote boot images can be created to drive the installation of other operating systems like OS/2 Warp to the local disk of the client 400. The hard disk partition is formatted, and the files required to perform the installation of the operating system are copied down to the local disk from the shared directory on the server. An unattended install of the target client operating system (Windows 95, or OS/2 Warp) is initiated.

Current US Original Classification (1):
713/2

First Hit Fwd Refs

Generate Collection Print

L3: Entry 8 of 18 File: USPT Jul 16, 2002

US-PAT-NO: 6421777
DOCUMENT-IDENTIFIER: US 6421777 B1
**** See image for Certificate of Correction ****

TITLE: Method and apparatus for managing boot images in a distributed data processing system

DATE-ISSUED: July 16, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Pierre-Louis; Marc-Arthur	Round Rock	TX		
Paul; Chakkalamattam Jos	Austin	TX		
Radhakrishnan; Sockalingam	Austin	TX		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
International Business Machines Corporation	Armonk	NY			02

APPL-NO: 09/ 299938 [PALM]
DATE FILED: April 26, 1999

INT-CL: [07] G06 F 9/445

US-CL-ISSUED: 713/2
US-CL-CURRENT: 713/2

FIELD-OF-SEARCH: 713/2, 709/203, 709/220, 709/222

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
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☐	5452454	September 1995	Basu	713/2
☐	5577210	November 1996	Abdous et al.	709/219
☐	5948101	September 1999	David et al.	713/2
☐	6098158	August 2000	Lay et al.	711/162

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ART-UNIT: 2185

PRIMARY-EXAMINER: Heckler; Thomas M.

ATTY-AGENT-FIRM: Yee; Duke W. LaBaw; Jeffrey S.

ABSTRACT:

A method and apparatus for booting a client data processing system from a set of boot images stored on a server data processing system. At power up of the client data processing system, an image request is sent to the server data processing system from the client data processing system. According to a state of the client data processing system, an initial boot image is selected and sent to the client data processing system. The state of the client data processing system is monitored. Responsive to an indication that the client data processing system needs to be rebooted, a new boot image is selected, if needed depending on the state, and sent to the client data processing system. This selection is made according to the state of the client data processing system at the time the indication is identified. The client data processing system is rebooted using the boot image from the server data processing system.

36 Claims, 8 Drawing figures

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L3: Entry 7 of 18 File: USPT Oct 8, 2002

DOCUMENT-IDENTIFIER: US 6463530 B1
** See image for Certificate of Correction **
TITLE: Method and apparatus for remotely booting a client computer from a network by emulating remote boot chips

Brief Summary Text (19):
One prior art computing environment that employs remote booting provides a protocol for remote booting called Remote Initial Program Load (RIPL). RIPL is the process of loading an operating system onto a workstation from a location that is remote to the workstation. The RIPL protocol was co-developed by 3Com, Microsoft, and IBM. It is used today with IBM OS/2 Warp Server, DEC Pathworks, and Windows NT. Two other commonly used Remote IPL protocols are a Novell NCP (NetWare Core Protocol), and BOOT-P, an IEEE standard, used with UNIX and TCP/IP networks.

Detailed Description Text (71):
The hardware-based solution of the prior art does not allow any user interaction with the remote boot process. Everything that occurs in the client machine is based on the MAC address, which is a hardware name embedded in the chip. A server on the LAN that recognizes the client computer's MAC address will respond in a pre-determined way. The present invention allows a selection of MAC addresses that can provide different boots for different uses. For example, a menu could be presented to the user that provides a choice of operating systems from which to boot, such as OS/2 or JavaOS, as well as a choice of local or remote booting.

Current US Original Classification (1):
713/2

L2: Entry 3 of 46 File: USPT Jul 8, 2003

DOCUMENT-IDENTIFIER: US 6591324 B1
TITLE: Hot swap processor card and bus

Abstract Text (1):
A processor card has a connector for plugging into a processor slot, signal switching circuitry electrically connected to the connector, power switching circuitry for controlling power to the processor card and a processor electrically connected to the signal switching circuitry. The power switching circuitry allows power to be selectively delivered to the processor card, and the signal switching circuitry enables the processor card to be hot swapped in and out of a PCI hot swap bus. The processor card works in conjunction with a similar processor card on the bus to perform the hot swap procedure.

Brief Summary Text (9):
Please refer to FIG. 1. FIG. 1 is a function block diagram of a PCI hot swap bus 10, which is used as a server that controls a RAID hard disk array. The PCI hot swap bus 10 comprises a processor slot 11 into which is plugged a processor card 20, and a plurality of add-on-card slots 12 into which are plugged various add-on cards. Some of the add-on cards may be I/O cards 14 that establish communications with external devices, such as modems. Other add-on cards may be network cards 16 to establish communications across a network, or SCSI cards 18 to communicate with SCSI devices. Other types of cards may, of course, be plugged into the bus 10. Each card is connected to a corresponding slot via a connector 13. Excepting the processor card 20, every card on the PCI hot swap bus 10 comprises power switching circuitry 15, signal switching circuitry 17, and PCI circuitry 19 dedicated to fulfilling the specific functionality of the card. The power switching circuitry 15 is used to individually control power to each card. The power switching circuitry 15 may be manually controlled, or may be controlled by another device on the bus 10, such as the processor card 20. The signal switching circuitry 17 is used to electrically connect and disconnect the card from signal lines of the bus 10. The signal switching circuitry 17 is of critical importance when hot swapping a card, as it prevents transients from disrupting other cards on the bus 10, and performs appropriate hardware interfacing protocol functions when an add-on card is being inserted into, or pulled from, an add-on-card slot 12.

Brief Summary Text (10):
The processor card 20, however, is special in the prior art PCI hot swap bus 10. It has neither power switching circuitry nor signal switching circuitry. Instead, it has a processor 25 and PCI circuitry 27. The PCI circuitry 27 interfaces the processor 25 with the PCI hot swap bus 10, and also improves the fan-out capabilities of the processor card 20, allowing it to interface with more-add-on cards on the bus 10. In this example, the processor card 20 is used to control a RAID control circuit 40 for an array of hard disk drives 42. The RAID control circuit 40 controls the hard disk drives 42 to fetch and store information.

Brief Summary Text (12):
Although all the add-on cards 14, 16 and 18 may be hot swapped from their add-on-card slots 12, the processor card 20 is, again, an exception. Because the processor card 20 lacks both the signal switching circuitry and the power switching circuitry of the other cards, it cannot be hot swapped from the processor slot 11. It lacks

the necessary hardware to conform to the PCI hot swap specifications. Moreover, hot swapping a processor card 20 is generally considered impossible because the processor card 20 usually controls many of the signal lines 10 on the bus that the other cards require to function properly.

Brief Summary Text (16):
The present invention, briefly summarized, discloses a processor card that plugs into a processor slot on a PCI hot swap bus. The processor card has a connector for plugging into the processor slot, signal switching circuitry electrically connected to the connector, power switching circuitry for controlling power to the processor card and a processor electrically.about.connected to the signal switching circuitry. The power switching circuitry allows power to be selectively delivered to the processor card, and the signal switching circuitry enables the processor card to be hot swapped in and out of the PCI hot swap bus.

Detailed Description Text (4):
A power control circuit 150 plugs into the backplane 102 to supply power to the slots 104, 105, and thus to the cards within the slots 104, 105. The power switching circuitry 112, 122 on each card permits power to be selectively delivered to the card. This power switching circuitry 112, 122 can be both manually controlled to turn a card on or off, and it may also be remotely controlled by other cards on the PCI hot swap bus 100 to turn the card off. Specifically, the processor cards 120 can control the power switching circuitry 112, 122 of the other cards to turn the cards off. The power switching circuitry 112, 122 on each card receives power through its corresponding connector 130 and delivers power to all of the other components on the card, such as to the signal switching circuitry 114, 128, the PCI circuitry 116, 126, and to the processor 118 if the card is a processor card 120.

Detailed Description Text (8):
When power is delivered to the backplane 102 and all of the cards in their slots 104, 105 come online, in the present invention PCI hot swap bus 100 only one of the processor cards 120 actually connects to the bus 100 via its signal switching circuitry 128. The second processor card 120 sets its signal switching circuitry 128 so that it is electrically disconnected from the PCI hot swap bus 100. Consequently, the first processor card 120 becomes the main processor, controlling the RAID control circuit 200 of the server. The second processor card 120 stands idle. The first processor card 120 remains, however, in communication with the second processor card 120 via the communications line 140, and periodically informs the second processor card 120 of its health, that is, of the perceived health of the first processor card 120. Furthermore, the health of the first processor card 120 may be actively monitored by the second processor card 120.

Detailed Description Text (11):
By using two processor cards 120 with signal switching circuitry 128 and power switching circuitry 122, and by maintaining communications between the processor cards 120, the present invention PCI hot swap bus 100 can successfully hot swap either one of the processor cards 120. This provides component redundancy that successfully avoids any downtime of the computing device, thus saving money and preventing costly losses of data for systems where downtime cannot be tolerated.

Detailed Description Text (12):
In contrast to the prior art, the present invention processor card uses signal switching circuitry and power switching circuitry to conform to PCI hot swap specifications. By using a dedicated communications line to communicate with a similar processor card on the bus, either one of the processor cards may take control of the bus while the other disconnects from the bus. The disconnected processor card can then be swapped out of the bus and replaced with a new processor card.

Current US Original Classification (1):
710/302

CLAIMS:

1. A hot swappable processor card for a hot swap bus, the hot swappable processor card plugging into a processor slot of the hot swap bus, the hot swappable processor card comprising: a connector for plugging into the processor slot, the hot swappable processor card being hot swapped into the hot swap bus by plugging the connector into the processor slot, and hot swapped out of the hot swap bus by unplugging the connector from the processor slot; signal switching circuitry for connecting signal lines on the hot swappable processor card to signal lines of the hot swap bus, the signal switching circuitry electrically connected to the connector and enabling the hot swappable processor card to be hot swapped; a processor electrically connected to the signal switching circuitry; power switching circuitry for controlling power to the processor card; and a communications line for communicating with a second processor card that is plugged into the hot swap bus; wherein the second processor card can control the signal switching circuitry to electrically disconnect the hot swappable processor card from the bus.

6. The hot swappable processor card of claim 1 wherein the second processor card can control the power switching circuitry to turn off or turn on the hot swappable processor card.

8. A hot swap bus comprising: a first processor card and a second processor card, the first processor card plugging into a first processor slot on the hot swap bus, the second processor card plugging into a second processors slot on the hot swap bus, the first processor card and the second processor card each comprising: a connector for plugging into the first processor slot or the second processor slot, the processor card being hot swapped into the hot swap bus by plugging the connector into the processor slot, and being hot swapped out of the hot swap bus by unplugging the connector from the processor slot; signal switching circuitry for connecting signal lines on the processor card to signal lines of the hot swap bus, the signal switching circuitry electrically connected to the connector and enabling the processor card to be hot swapped; a processor electrically connected to the signal switching circuitry; and power switching circuitry for controlling power to the processor card; and a communications line that permits the first processor card and the second processor card to communicate with each other; wherein the second processor card can control the signal switching circuitry of the first processor card to electrically disconnect the first processor card from the bus.

13. The hot swap bus of claim 8 wherein the second processor card can control the power switching circuitry of the first processor card to turn off or turn on the first processor card.

First Hit Fwd Refs

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L2: Entry 3 of 46 File: USPT Jul 8, 2003

US-PAT-NO: 6591324
DOCUMENT-IDENTIFIER: US 6591324 B1

TITLE: Hot swap processor card and bus

DATE-ISSUED: July 8, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Chen; Hsiang-Chan	Taipei			TW
Tung; Hui-Guo	Taipei Hsien			TW

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Nexcom International Co. Ltd.	Chung-Ho			TW	03

APPL-NO: 09/ 614563 [PALM]
DATE FILED: July 12, 2000

INT-CL: [07] G06 F 13/00

US-CL-ISSUED: 710/302; 710/300
US-CL-CURRENT: 710/302; 710/300

FIELD-OF-SEARCH: 710/300, 710/301, 710/302, 710/303, 710/304, 714/11, 714/13, 714/41

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

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☐	5953314	September 1999	Ganmukhi et al.	370/220
☐	5986880	November 1999	Santeler et al.	361/684
☐	6061752	May 2000	Jones et al.	710/302
☐	6282596	August 2001	Bealkowski et al.	710/302

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ART-UNIT: 2189

PRIMARY-EXAMINER: Thai; Xuan M.

ASSISTANT-EXAMINER: Vo; Tim

ATTY-AGENT-FIRM: Hsu; Winston

ABSTRACT:

A processor card has a connector for plugging into a processor slot, signal switching circuitry electrically connected to the connector, power switching circuitry for controlling power to the processor card and a processor electrically connected to the signal switching circuitry. The power switching circuitry allows power to be selectively delivered to the processor card, and the signal switching circuitry enables the processor card to be hot swapped in and out of a PCI hot swap bus. The processor card works in conjunction with a similar processor card on the bus to perform the hot swap procedure.

14 Claims, 2 Drawing figures

L2: Entry 6 of 46 File: USPT Mar 18, 2003

DOCUMENT-IDENTIFIER: US 6535944 B1
TITLE: Hot plug control of MP based computer system

Abstract Text (1):
A method of servicing a computer system without interrupting operation of the computer system, by connecting a computer component to a board of the computer system, detecting connection of the computer component to the system board using a control circuit, supplying power to the voltage input of the computer component in response to detecting the connection, and thereafter monitoring the power supplied to the voltage input of the computer component. The method may be used for core computer components such as CPU modules and voltage regulator modules. Power to the voltage input of the computer component is turned off in response to a determination that a current level of the power supplied to the voltage input exceeds a specified level. A fault signal is latched in an active state in response to the determination; the fault signal is reset when the component is removed from the system. The method also applies to a plurality of hot-pluggable components, wherein the power supplied to each component is individually monitored.

Brief Summary Text (9):
This hot-plug capability has never been expanded to core or low-level components such as processors, system memory, or voltage regulator modules (VRMs), which are used to produce the required power sources/references at precise voltages. While processors and system RAM can be added or swapped out in some conventional systems, these systems must still be powered down for such upgrades or service. Furthermore, components such as VRMs are generally not removable, and any replacement requires field service by a qualified engineer, since the VRM is hardwired into the system.

Brief Summary Text (16):
The foregoing objects are achieved in a method of servicing a computer system without interrupting operation of the computer system, generally comprising the steps of connecting at least one computer component to a board of the computer system, the computer component having a voltage input, detecting connection of the computer component to the system board using a control circuit of the computer system, supplying power to the voltage input of the computer component in response to said detecting step, and thereafter monitoring the power supplied to the voltage input of the computer component. The method may advantageously be used to provide for the removable interconnection (hot-plugging) of core computer components such as CPU modules and voltage regulator modules. The method may further include the step of turning off power to the voltage input of the computer component in response to a determination that a current level of the power supplied to the voltage input of the computer component exceeds a specified level. A fault signal is latched in an active state in response to the determination; the fault signal is reset when the component is removed from the system.

Detailed Description Text (6):
In the illustrative embodiment, hotplug control circuit 34 is implemented with a field programmable gate array (FPGA). FIG. 3 shows a detailed plan of a hotplug control FPGA 38 configured in accordance with the present invention. Hotplug control FPGA 38 is adapted for use with hot-pluggable VRMs, hot-pluggable CPU modules, etc. A plurality of Presence Detect signals are input into the soft start

control logic 35, which has as its outputs a plurality of respective soft start on/off lines. A plurality of fault signals are similarly input into the fault control logic 37, which has as its outputs a plurality of respective reset lines. The voltage good signals from each hot-pluggable VRM or CPU quad are respectively consolidated in power good control logic 39, which generates the Power Good signals for the rest of the system.

Current US Original Classification (1):
710/302

First Hit Fwd Refs

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L2: Entry 6 of 46 File: USPT Mar 18, 2003

US-PAT-NO: 6535944
DOCUMENT-IDENTIFIER: US 6535944 B1

TITLE: Hot plug control of MP based computer system

DATE-ISSUED: March 18, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Johari; Girish Chandra	Austin	TX		
Mueller; Mark Wayne	Austin	TX		
Thomsen; Peter Matthew	Austin	TX		
Walter; Lucinda Mae	Austin	TX		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
International Business Machines Corporation	Armonk	NY			02

APPL-NO: 09/ 281082 [PALM]
DATE FILED: March 30, 1999

INT-CL: [07] G06 F 1/00

US-CL-ISSUED: 710/302; 710/301, 710/304, 713/340, 713/330
US-CL-CURRENT: 710/302; 710/301, 710/304, 713/330, 713/340

FIELD-OF-SEARCH: 710/300-304, 710/311, 710/313, 710/314, 710/62-64, 710/72, 713/330-340

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

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☐	5712754	January 1998	Sides et al.	361/58
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Atty. Docket No. AT9-98-835; U.S. patent application Ser. No. 09/281,081, Related Co-pending Application Girish Johari, et al., filed Mar. 30, 1999.

ART-UNIT: 2181

PRIMARY-EXAMINER: Wong; Peter

ASSISTANT-EXAMINER: Phan; Raymond N

ATTY-AGENT-FIRM: Bracewell & Patterson, LLP

ABSTRACT:

A method of servicing a computer system without interrupting operation of the computer system, by connecting a computer component to a board of the computer system, detecting connection of the computer component to the system board using a control circuit, supplying power to the voltage input of the computer component in response to detecting the connection, and thereafter monitoring the power supplied to the voltage input of the computer component. The method may be used for core computer components such as CPU modules and voltage regulator modules. Power to the voltage input of the computer component is turned off in response to a determination that a current level of the power supplied to the voltage input exceeds a specified level. A fault signal is latched in an active state in response to the determination; the fault signal is reset when the component is removed from the system. The method also applies to a plurality of hot-pluggable components, wherein the power supplied to each component is individually monitored.

11 Claims, 4 Drawing figures

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L4: Entry 5 of 7 File: USPT Oct 17, 2000

DOCUMENT-IDENTIFIER: US 6134615 A
TITLE: System for facilitating the replacement or insertion of devices in a computer system through the use of a graphical user interface

Detailed Description Text (19):
FIG. 5 shows the basic hardware components at the server that respond to instructions generated by the Custom GUI Modules 56 generated by the Hot Plug PCI Wizard software in Maestro 14. In FIG. 5, the specific instruction involved deals with hot swapping a peripheral adapter 62. As explained above, the server operating system could be Windows.RTM. NT or NetWare.RTM., including others. First, the GUI 64 accepts a request by the user, such as a system manager or administrator, to perform a hot add or hot swap of a peripheral adapter 62 at the server. The GUI 64 transmits the user's instruction through the operating system 66 to the hot plug system driver 68 and the adapter driver 70 or drivers associated with the peripheral adapter 62. The hot plug system driver 68 controls the adapter driver 70 for a hot plug operation. The hot plug system driver 68 suspends and resumes the communications between the peripheral adapter 62 and the adapter driver 70. During the hot add or swap of the peripheral adapter 62, the hot plug hardware 72 deactivates the power to the peripheral adapter, allowing the user to remove it from the server and replace it with another peripheral adapter. One embodiment of the hot plug hardware 72 may include a network of microcontrollers to carry out this functionality. The peripheral adapter 62 could be any kind of peripheral device, such as a math co-processor, a sound board, or other devices well known in the art.

Current US Original Classification (1):
710/302

First Hit Fwd Refs

☐ Generate Collection Print

L4: Entry 5 of 7 File: USPT Oct 17, 2000

US-PAT-NO: 6134615
DOCUMENT-IDENTIFIER: US 6134615 A

TITLE: System for facilitating the replacement or insertion of devices in a computer system through the use of a graphical user interface

DATE-ISSUED: October 17, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Chari; Srikumar N.	Cupertino	CA		
Bright; Kenny L.	Hayward	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Micron Electronics, Inc.	Nampa	ID			02

APPL-NO: 08/ 942317 [PALM]
DATE FILED: October 1, 1997

PARENT-CASE:
PRIORITY CLAIM The benefit under 35 U.S.C. .sctn. 119(e) of U.S. Provisional Application Ser. No. 60/046,310, filed May 13, 1997 and entitled "High Performance Network Server System Management Interface," is hereby claimed.

INT-CL: [07] G06 F 13/00

US-CL-ISSUED: 710/103; 706/11, 345/348, 395/701
US-CL-CURRENT: 710/302; 345/835, 706/11, 717/174

FIELD-OF-SEARCH: 395/281-283, 395/828-830

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

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ART-UNIT: 271

PRIMARY-EXAMINER: Sheikh; Ayaz R.

ASSISTANT-EXAMINER: Lefkowitz; Sumati

ATTY-AGENT-FIRM: Knobbe, Martens, Olson & Bear LLP

ABSTRACT:

A computer software system is disclosed for facilitating a user's replacement or insertion of devices in a computer server network system. The system allows a user to swap or add peripheral devices while the system is running, or in a "hot" condition, with little or no user knowledge of how the system carries out the "hot swap" or "hot add" functions. The system, which consists of a graphical user interface (GUI) and associated computer software modules, allows the user to select a desired peripheral device location within a server, and then provides the modular software structure to automatically execute a series of steps in the hot swap or hot add process. Each step is prompted by the user from the GUI, to invoke commands to instruct a network server through its operating system and hardware to suspend the appropriate device adapters, if necessary, power down the desired device slot or canister, allow the user to replace or insert a new device, and finally restart the adapters and the slot power. The system requires very little detailed input from the user other than identifying the particular peripheral device slot within the server to be maintained.

18 Claims, 32 Drawing figures

L3: Entry 1 of 9 File: USPT Dec 9, 2003

DOCUMENT-IDENTIFIER: US 6661671 B1
TITLE: Apparatus, method and article of manufacture for determining power permission for a blade spanning power back planes

Detailed Description Text (4):
FIG. 1A depicts a chassis 11 with a single wide blade 13 and double wide blade 15 and a total of fourteen blade slots shown. Midplane 17 is depicted in FIG. 1. FIG. 1B depicts switch module switch module 19 , power supply A 21, power supply B 25, blower 23 and chassis controller 27. Midplane 17 is a board which provides connectors for all blades, power supplies, switch modules, the chassis controller 27 and it also provides the interconnections between subsystems. Midplane 17 provides a power connection and electrical interface connection for each slot. Switch module 19 may be included and can provide multi-port Ethernet or Fibre Channel switches for use by all of the blades and the chassis controller 27. The power modules 21 and 25 provide DC operating voltages for the chassis components including the chassis controller 27, the blades and other components. The power supply B 25 is needed if all slots are to be fully populated with blades. Power supply B 25 may be used as a backup power supply to power supply A until it is needed. The components (power supplies, switch, chassis controller, blades, blower) are hot plugable subsystem modules. Each power supply provides enough power to support state of the art processors on the blades.

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L3: Entry 1 of 9 File: USPT Dec 9, 2003

US-PAT-NO: 6661671
DOCUMENT-IDENTIFIER: US 6661671 B1

TITLE: Apparatus, method and article of manufacture for determining power permission for a blade spanning power back planes

DATE-ISSUED: December 9, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Franke; Jeffery Michael	Apex	NC		
Klodnicki; Edward Joseph	Durham	NC		
Johnson; Donald Eugene	Apex	NC		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
International Business Machines Corporation	Armonk	NY			02

APPL-NO: 10/ 306303 [PALM]
DATE FILED: November 27, 2002

INT-CL: [07] H05 K 5/00

US-CL-ISSUED: 361/752; 361/797, 361/802, 361/686, 361/796, 439/377
US-CL-CURRENT: 361/752; 361/686, 361/796, 361/797, 361/802, 439/377

FIELD-OF-SEARCH: 361/752, 361/797, 361/724, 361/714, 361/796, 361/756, 361/741, 361/715, 361/727, 361/686, 361/802, 361/788, 361/785, 439/377, 439/74, 714/14

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
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☐	5954823	September 1999	Cutts et al.	714/14
☐	6411506	June 2002	Hipp et al.	361/686
☐	6538902	March 2003	Beard	361/818

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ART-UNIT: 2841

PRIMARY-EXAMINER: Martin; David

ASSISTANT-EXAMINER: Bui; Hung

ATTY-AGENT-FIRM: McKinley; Martin J.

ABSTRACT:

A chassis controller can identify a blade that spans more than one power plane. If power is healthy and available on all power planes then the blade may be granted permission to power on. The chassis controller validates that when a blade spans multiple power planes that the necessary power is available before permitting the blade to go to fully power operation.

6 Claims, 12 Drawing figures

L3: Entry 2 of 9 File: USPT Jul 15, 2003

DOCUMENT-IDENTIFIER: US 6594150 B2
TITLE: Computer system having front and rear cable access

Detailed Description Text (17):
FIG. 2 shows one embodiment of of a computer system having field replaceable units. Computer system 200 is comprised of a drawer assembly or subchassis 202, which is removably installed within a chassis (not shown). Computer system 200 further includes a system display panel 204 which itself is a field replaceable unit, and will further be described below in connection with FIG. 3. Behind the system display panel 204 are located two fan trays and system control board which are not shown, but will be shown in connection with FIG. 3 Computer system 200 has two power supplies represented by 206 and 208. Each of the power supplies 206 and 208 are field replaceable units. Power supplies may be for example DC or AC power supplies. Computer system 200 may also comprise one or more mass storage devices. For example, system may include a removable media module 210, and one or more hard disk drive assemblies, 212 and 214. One or more expansion slots 218 which all are adapted to support field replaceable expansion cards. Examples of expansion cards include network interface controllers, such as ethernet and fast ethernet, system alarm cards, and CPU cards. These cards may all be compliant with the Compact PCI standard and may be hot swappable. An exemplary system such as the one shown in FIG. 2 may be the Netra.RTM. ct800 by Sun Microsystems.RTM.. An exemplary system may be certified to meet or exceed the Network Equipment Building System (NEBS) Level 3 standard as defined by Bellcore and ETSI.

First Hit Fwd Refs

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L3: Entry 2 of 9 File: USPT Jul 15, 2003

US-PAT-NO: 6594150
DOCUMENT-IDENTIFIER: US 6594150 B2

TITLE: Computer system having front and rear cable access

DATE-ISSUED: July 15, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Mautz; Timothy E.	San Francisco	CA		
Wilson; Steve M.	San Jose	CA		
Ho; Raymond Kai	San Jose	CA		
Kermaani; Kaamel	Cupertino	CA		
Meert; Carl	Sunnyvale	CA		
Bigio; Adiymar	Scotts Valley	CA		
Hileman; Vince	Sunnyvale	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Sun Microsystems, Inc.	Santa Clara	CA			02

APPL-NO: 09/ 776455 [PALM]
DATE FILED: February 2, 2001

PARENT-CASE:
CROSS REFERENCE TO RELATED APPLICATIONS This application claims priority to provisional application Serial No. 60/179,734 filed Feb. 2, 2000.

INT-CL: [07] H05 K 1/14

US-CL-ISSUED: 361/727; 361/679, 345/503, 439/61
US-CL-CURRENT: 361/727; 345/503, 361/679, 439/61

FIELD-OF-SEARCH: 361/727, 361/683, 361/726, 361/679, 361/784, 710/309-313, 345/503, 345/519, 439/61

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

h e b b g eeef c e g c e ge

Search Selected | Search ALL | Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	5822184	October 1998	Rabinovitz	361/685
☐	6046912	April 2000	Leman	361/784
☐	6091609	July 2000	Hutson et al.	361/794
☐	6288894	September 2001	Schmitt	361/683
☐	6297962	October 2001	Johnson et al.	361/726
☐	6325636	December 2001	Hipp et al.	439/61

ART-UNIT: 2835

PRIMARY-EXAMINER: Schuberg; Darren

ASSISTANT-EXAMINER: Duong; Hung Van

ATTY-AGENT-FIRM: Park, Vaughan & Fleming LLP

ABSTRACT:

A computer system comprising a chassis and housing removable servers supported in subchassis, each chassis having optional front or read cable access. Power and signal connectivity to the servers may be made from the front or rear of the system. The subchassis may be half the width of the chassis or a quarter of a width of the chassis. The subchassis further include an upper bay and a lower bay as well as a plurality of field replaceable units, which all may be access through the front of the chassis. One or more of the field replaceable units connect to the system through a midplane, located within the subchassis.

34 Claims, 8 Drawing figures

h e b b g e e e f c e g c e ge

US-PAT-NO: 6661671

DOCUMENT-IDENTIFIER: US 6661671 B1

TITLE: Apparatus, method and article of manufacture for determining power permission for a blade spanning power back planes

---------- KWIC ---------

Detailed Description Text - DETX (4):

FIG. 1A depicts a chassis 11 with a single wide blade 13 and double wide blade 15 and a total of fourteen blade slots shown. Midplane 17 is depicted in FIG. 1. FIG. 1B depicts switch module switch module 19 , power supply A 21, power supply B 25, blower 23 and chassis controller 27. Midplane 17 is a board which provides connectors for all blades, power supplies, switch modules, the chassis controller 27 and it also provides the interconnections between subsystems. Midplane 17 provides a power connection and electrical interface connection for each slot. Switch module 19 may be included and can provide multi-port Ethernet or Fibre Channel switches for use by all of the blades and the chassis controller 27. The power modules 21 and 25 provide DC operating voltages for the chassis components including the chassis controller 27, the blades and other components. The power supply B 25 is needed if all slots are to be fully populated with blades. Power supply B 25 may be used as a backup power supply to power supply A until it is needed. The components (power supplies, switch, chassis controller, blades, blower) are hot plugable subsystem modules. Each power supply provides enough power to support state of the art processors on the blades.

US006661671B1

(12) **United States Patent**
Franke et al.

(10) **Patent No.: US 6,661,671 B1**
(45) **Date of Patent: Dec. 9, 2003**

(54) **APPARATUS, METHOD AND ARTICLE OF MANUFACTURE FOR DETERMINING POWER PERMISSION FOR A BLADE SPANNING POWER BACK PLANES**

(75) Inventors: **Jeffery Michael Franke**, Apex, NC (US); **Edward Joseph Klodnicki**, Durham, NC (US); **Donald Eugene Johnson**, Apex, NC (US)

(73) Assignee: **International Business Machines Corporation**, Armonk, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/306,303**

(22) Filed: **Nov. 27, 2002**

(51) Int. Cl.[7] H05K 5/00

(52) U.S. Cl. 361/752; 361/797; 361/802; 361/686; 361/796; 439/377

(58) Field of Search 361/752, 797, 361/724, 714, 796, 756, 741, 715, 727, 686, 802, 788, 785; 439/377, 74; 714/14

(56) References Cited

U.S. PATENT DOCUMENTS

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5,954,823	A *	9/1999	Cutts et al.	714/14
6,411,506	B1 *	6/2002	Hipp et al.	361/686
6,538,902	B1 *	3/2003	Beard	361/818

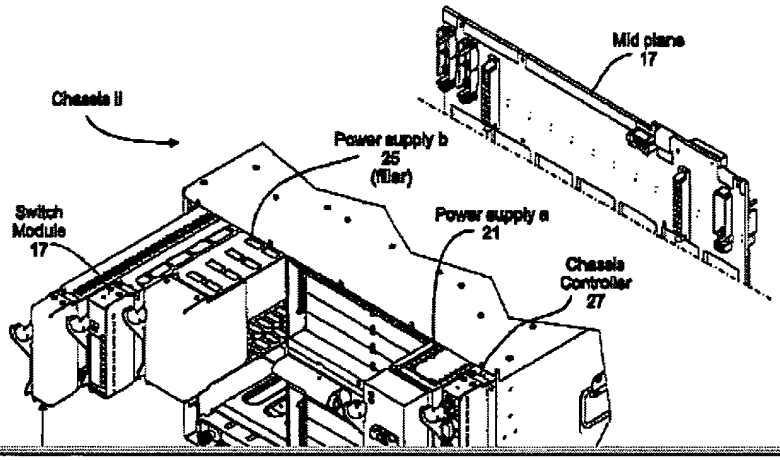
* cited by examiner

Primary Examiner—David Martin
Assistant Examiner—Hung Bui
(74) *Attorney, Agent, or Firm*—Martin J. McKinley

(57) **ABSTRACT**

A chassis controller can identify a blade that spans more than one power plane. If power is healthy and available on all power planes then the blade may be granted permission to power on. The chassis controller validates that when a blade spans multiple power planes that the necessary power is available before permitting the blade to go to fully power operation.

6 Claims, 10 Drawing Sheets



US-PAT-NO: 6594150

DOCUMENT-IDENTIFIER: US 6594150 B2

TITLE: Computer system having front and rear cable access

---------- KWIC ---------

Detailed Description Text - DETX (17):

FIG. 2 shows one embodiment of of a computer system having field replaceable units. Computer system 200 is comprised of a drawer assembly or subchassis 202, which is removably installed within a chassis (not shown). Computer system 200 further includes a system display panel 204 which itself is a field replaceable unit, and will further be described below in connection with FIG. 3. Behind the system display panel 204 are located two fan trays and system control board which are not shown, but will be shown in connection with FIG. 3 Computer system 200 has two power supplies represented by 206 and 208. Each of the power supplies 206 and 208 are field replaceable units. Power supplies may be for example DC or AC power supplies. Computer system 200 may also comprise one or more mass storage devices. For example, system may include a removable media module 210, and one or more hard disk drive assemblies, 212 and 214. One or more expansion slots 218 which all are adapted to support field replaceable expansion cards. Examples of expansion cards include network interface controllers, such as ethernet and fast ethernet, system alarm cards, and CPU cards. These cards may all be compliant with the Compact PCI standard and may be hot swappable. An exemplary system such as the one shown in FIG. 2 may be the Netra.RTM. ct800 by Sun Microsystems.RTM.. An exemplary system may be certified to meet or exceed the Network Equipment Building System (NEBS) Level 3 standard as defined by Bellcore and ETSI.

US006594150B2

(12) **United States Patent**
Creason et al.

(10) **Patent No.: US 6,594,150 B2**
(45) **Date of Patent: Jul. 15, 2003**

(54) **COMPUTER SYSTEM HAVING FRONT AND REAR CABLE ACCESS**

(75) Inventors: **Richard Creason**, Palo Alto, CA (US); **Clifford B. Willis**, Tracy, CA (US); **Denise Silverman**, San Carlos, CA (US); **Michael Sean White**, San Jose, CA (US); **David M. Arruda**, Scotts Valley, CA (US); **Victor E. JoChiong**, Mill Valley, CA (US); **Timothy E. Mantz**, San Francisco, CA (US); **Steve M. Wilson**, San Jose, CA (US); **Raymond Kai Ho**, San Jose, CA (US); **Kamnel Kermsuni**, Cupertino, CA (US); **Carl Meert**, Sunnyvale, CA (US); **Adlymar Rigio**, Scotts Valley, CA (US); **Vince Hilleman**, Sunnyvale, CA (US)

(73) Assignee: **Sun Microsystems, Inc.**, Santa Clara, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/776,495

(22) Filed: Feb. 2, 2001

(65) Prior Publication Data

US 2002/0012232 A1 Jan. 31, 2002

Related U.S. Application Data

(60) Provisional application No. 60/179,734, filed on Feb. 2, 2000.

(51) Int. Cl.[7] H05K 1/14

(52) U.S. Cl. 361/727; 361/679; 345/503; 439/61

(58) Field of Search 361/727, 683, 361/726, 679, 784; 710/309-313; 345/503, 519; 439/61

(56) References Cited

U.S. PATENT DOCUMENTS

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6,091,609	A *	7/2000	Hanson et al.	361/784
6,266,694	B1 *	9/2001	Duckwall	361/683
6,297,582	B1 *	10/2001	Johnson et al.	361/726
6,325,636	B1 *	12/2001	Hipp et al.	439/61

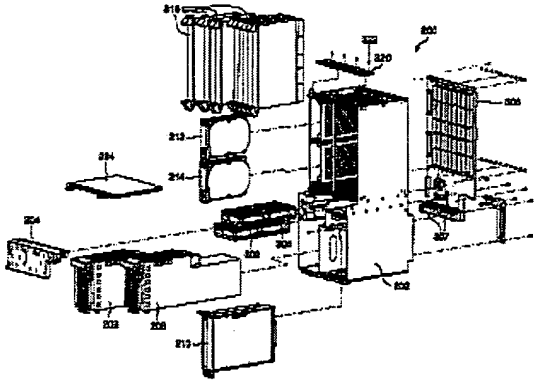
* cited by examiner

Primary Examiner—Darren Schuberg
Assistant Examiner—Hung Van Duong
(74) *Attorney, Agent, or Firm*—Park, Vaughan & Fleming LLP

(57) **ABSTRACT**

A computer system comprising a chassis and housing removable servers supported in subchassis, each chassis having optional front or rear cable access. Power and signal connectivity to the servers may be made from the front or rear of the system. The subchassis may be half the width of the chassis or a quarter of a width of the chassis. The subchassis further includes an upper bay and a lower bay as well as a plurality of field replaceable units, which all may be access through the front of the chassis. One or more of the field replaceable units connect to the system through a midplane, located within the subchassis.

34 Claims, 7 Drawing Sheets



US-PAT-NO: 5971804

DOCUMENT-IDENTIFIER: US 5971804 A

TITLE: Backplane having strip transmission line ethernet bus

---------- KWIC ---------

Abstract Text - ABTX (1):

A data server having a plurality of hot replaceable processing unit modules. Each module includes a motherboard having plugged therein: a CPU; a main memory; an I/O adapter card, and an interconnect printed board, electrically connected to the motherboard. A backplane has a first connector adapted for coupling to a DC power supply. The interconnect printed circuit board has a DC to DC converter connected to a second connector adapted to mate with the first connector to enable the processing unit module to be hot plugged into, or removed from, the backplane. The backplane has formed thereon a strip transmission line adapted to provide an Ethernet bus for interconnecting a plurality of the modules. A cable management system for a cabinet used to house the module includes at least one vertically extending channel disposed in the cabinet and a fastener adapted to open and enable the a cable to be inserted into the channel and close to retain such cable within the channel. A chassis having a plurality of shelves for supporting electrical modules with a partitioning member adapted for removable insertion onto one of the shelves to accommodate modules with different widths. An I/O adapter card mounting plate, with captive hardware, adapted for securing an array of I/O adapted cards, and honey-combed I/O adapter card filler plate to a case. A method for booting operating system software into a main memory of a processing unit.

US005971804A

United States Patent [19]

Gallagher et al.

[11] Patent Number: 5,971,804

[45] Date of Patent: Oct. 26, 1999

[54] **BACKPLANE HAVING STRIP TRANSMISSION LINE ETHERNET BUS**

[75] Inventors: Brian Gallagher, Marlboro; Nikolai Markovich, Hopkinton, both of Mass.

[73] Assignee: EMC Corporation, Hopkinton, Mass.

[21] Appl. No.: 08/884,381

[22] Filed: Jun. 30, 1997

[51] Int. Cl.[6] H01R 9/09; H01P 3/08

[52] U.S. Cl. 439/581; 333/238; 333/246

[58] Field of Search ..... 361/788, 792, 361/794, 795, 784, 785; 333/104, 116, 123, 124, 160, 161, 206, 243, 246, 247, 238; 439/63, 578, 581, 607, 608, 944; 174/28, 102 C, 102 SP; 395/250-284, 287, 621; 364/240, 240.1, 240.2, 240.3, 240.4, 240.5, 240.6, 240.7

[56] **References Cited**

U.S. PATENT DOCUMENTS

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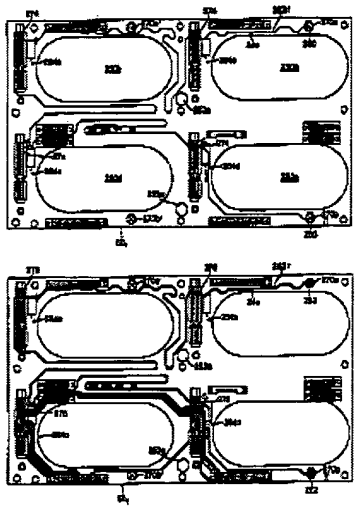
5,546,378	8/1996	Wirth et al.	370/229
5,676,553	10/1997	Leung	439/74

Primary Examiner—Leo P. Picard
Assistant Examiner—John B. Vigushin
Attorney, Agent, or Firm—Fish & Richardson P.C.

[57] **ABSTRACT**

A data server having a plurality of hot replaceable processing unit modules. Each module includes a motherboard having plugged therein: a CPU; a main memory; an I/O adapter card, and an interconnect printed board, electrically connected to the motherboard. A backplane has a first connector adapted for coupling to a DC power supply. The interconnect printed circuit board has a DC to DC converter connected to a second connector adapted to mate with the first connector to enable the processing unit module to be hot plugged into, or removed from, the backplane. The backplane has formed thereon a strip transmission line adapted to provide an Ethernet bus for interconnecting a plurality of the modules. A cable management system for a cabinet used to house the module includes at least one vertically extending channel disposed in the cabinet and a fastener adapted to open and enable the a cable to be inserted into the channel and close to retain such cable within the channel. A chassis having a plurality of shelves for supporting electrical modules with a partitioning member adapted for removable insertion onto one of the shelves to accommodate modules with different widths. An I/O adapter card mounting plate, with captive hardware, adapted for securing an array of I/O adapter cards, and honey-combed I/O adapter card filler plate to a case. A method for booting operating system software into a main memory of a processing unit.

5 Claims, 44 Drawing Sheets



L5: Entry 2 of 11 File: USPT Sep 2, 2003

DOCUMENT-IDENTIFIER: US 6615404 B1
TITLE: Method and apparatus for downloading software into an embedded-system

Brief Summary Text (9):
U.S. Pat. No. 5,647,986 discloses an automated apparatus for wastewater treatment, which is controlled by a controller. The controller includes a combination of a flash memory and a boot memory, with remote programming capability. The flash memory stores the operating program of the apparatus and the boot memory contains a boot code, which is required to handle basic communication and reprogramming of the flash memory. The controller establishes a connection with a central computer from which a new operating program is downloaded, and receives a command to erase the contents of the flash memory. After the contents of the latter have been erased, the controller begins to reprogram the flash memory with data that is transmitted from the central computer. After the programming is completed, the controller reboots the processing unit of the apparatus and the apparatus starts to operate according to the updated operating program. However, this apparatus has no backup or reboot capability in the event of a failure during download and/or programming process and requires a separate non-upgradable boot memory.

Detailed Description Text (5):
During the download process, a CRC (Cyclic Redundancy Code) is appended by the remote data source (of new software/boot versions) to each block of data that is transmitted to the system 10 over the link 14. The controller 11 applies the same CRC calculation to the received data and compares the result, which has been appended to the data block before transmission. If the results agree, it is an indication that the data block has been received successfully, i.e., without data errors, and is a correct copy. If the results do not agree, a request is transmitted over the communication line 14 to resend the data block and the block is then resent by the remote data source. This procedure is well known to a person who is skilled in the art. Once a logical sector has been properly received, as indicated by a valid CRC code, the sector is programmed by the upgrade program being run. The data is then read from the stored sector, and again confirmed, following which the status flag at the end of the sector is set to "valid".

Current US Original Classification (1):
717/173

Current US Cross Reference Classification (1):
717/178

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L3: Entry 12 of 13 File: USPT Nov 19, 1996

US-PAT-NO: 5577210
DOCUMENT-IDENTIFIER: US 5577210 A

TITLE: Remote booting of an operating system by a network

DATE-ISSUED: November 19, 1996

INT-CL: [06] G06 F 9/445

US-CL-ISSUED: 395/200.1; 395/200.2, 395/438, 395/894, 364/280.2, 364/975.2
US-CL-CURRENT: 709/219; 709/222, 710/74, 711/111

FIELD-OF-SEARCH: 395/200, 395/400, 395/200.09, 395/200.10, 395/200.11, 395/200.2, 395/404, 395/438, 395/439, 395/894, 364/280.23, 364/248.1, 364/280.2, 364/280.3, 364/280.6, 364/975.2

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